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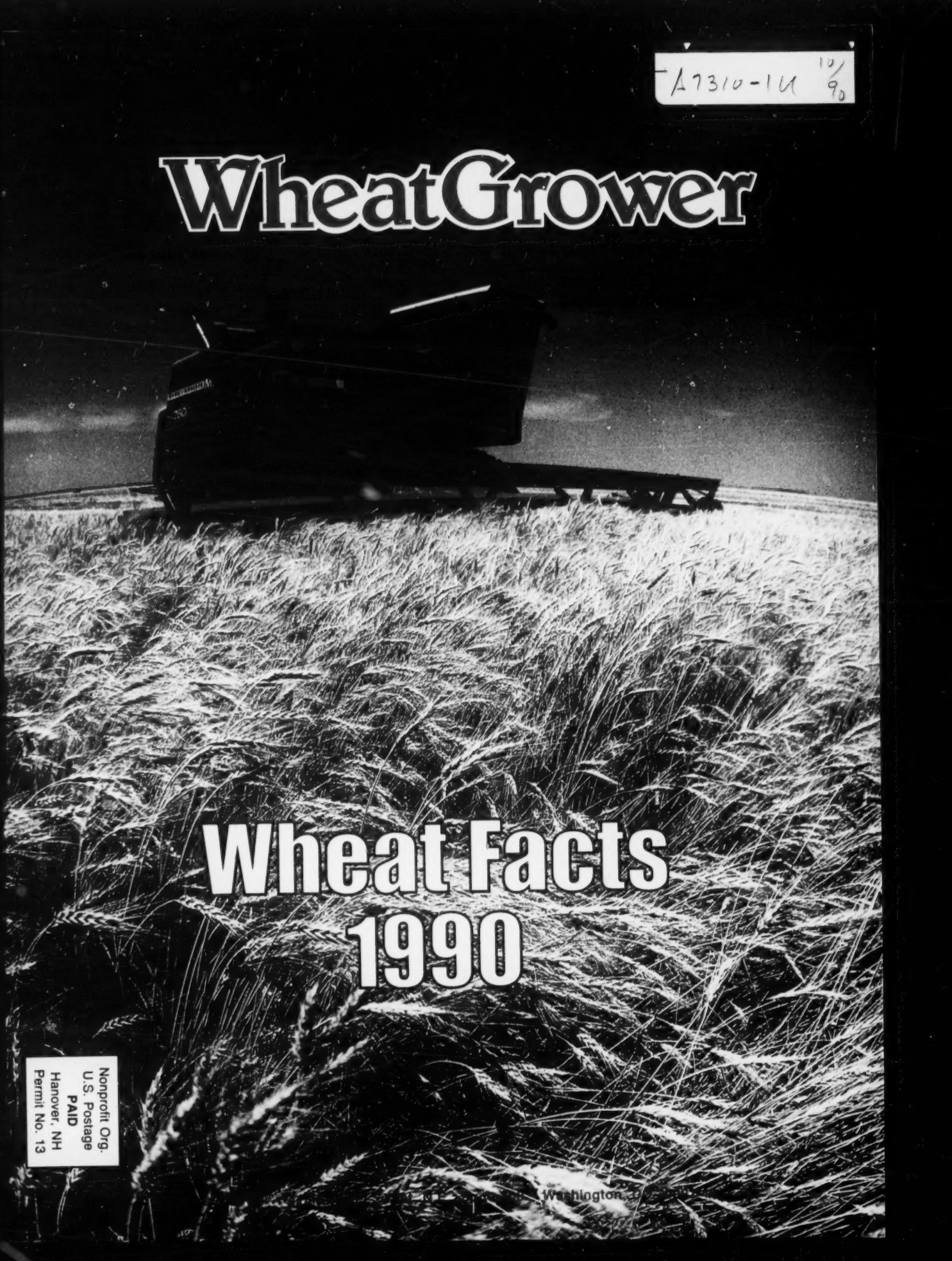

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The Wheat Grower
Official Publication of the National Association of Wheat Growers

September–October 1990

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The Wheat Grower
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THE FARM BILL AND ASCS

For more than a year the NAWG staff and officers have concentrated much hard work on the 1990 farm bill to gain the best available program for wheat producers. They are to be commended for their extra efforts and time spent beyond the call of duty.

As I write this article, the farm bill has not yet been approved by the Congress. When final approval will come, no one knows at this time. However, I would like to offer this bit of advice to all growers after the new farm law takes effect: study the new bill carefully and thoroughly to determine the best application to your own farming operation. I also want to offer a word of caution about many "expert" articles that will fill many papers and magazines: they may be helpful, but may not apply exactly to your operation.

One good way to avoid problems down the road is to get a complete copy of the wheat program—including all current amendments and interpretations—from your ASCS office and then get together with some of the leading farmers in your neighborhood to take it apart. Through a group discussion, you will come up with a lot more solutions and applications than if you try to wade through the whole thing by yourself.

For the five-year term of the farm bill, it will take good planning and close work with the ASCS and the Soil Conservation Service to benefit from the federal farm programs and to stay within their guidelines.

It usually is not a pleasant task to visit the ASCS office to conduct business, but a smile and an open attitude and mind will help. However, with all the forms, signatures, waiting, etc., it may get tough to keep that smile.

Remember that we elected the county committeemen who supervise the county executive director and the employees in the office. These same committeemen—your friends and neighbors—also approve or disapprove all programs and requests as part of their job. Not only is it important that you know these men and women, but also the state committee members who usually are appointed by your senior senator. As a wheat producer, you should make every effort to insure that the appointees are well-versed in the subject of wheat production.

Having served nine years as a county committeeman, having met with many ASCS personnel, state committees and having farming operations in three counties, I notice a trend developing for more elected county committeemen to be part-time or retired farmers. These are good people and good farmers, but my experience is that they can tend to be somewhat passive on tough issues. It is of the utmost importance that you, the active full-time producer, be involved with the workings of ASCS and the processes of the government's farm programs.

Madison Angell is a North Carolina wheat grower and secretary-treasurer of the NAWG.

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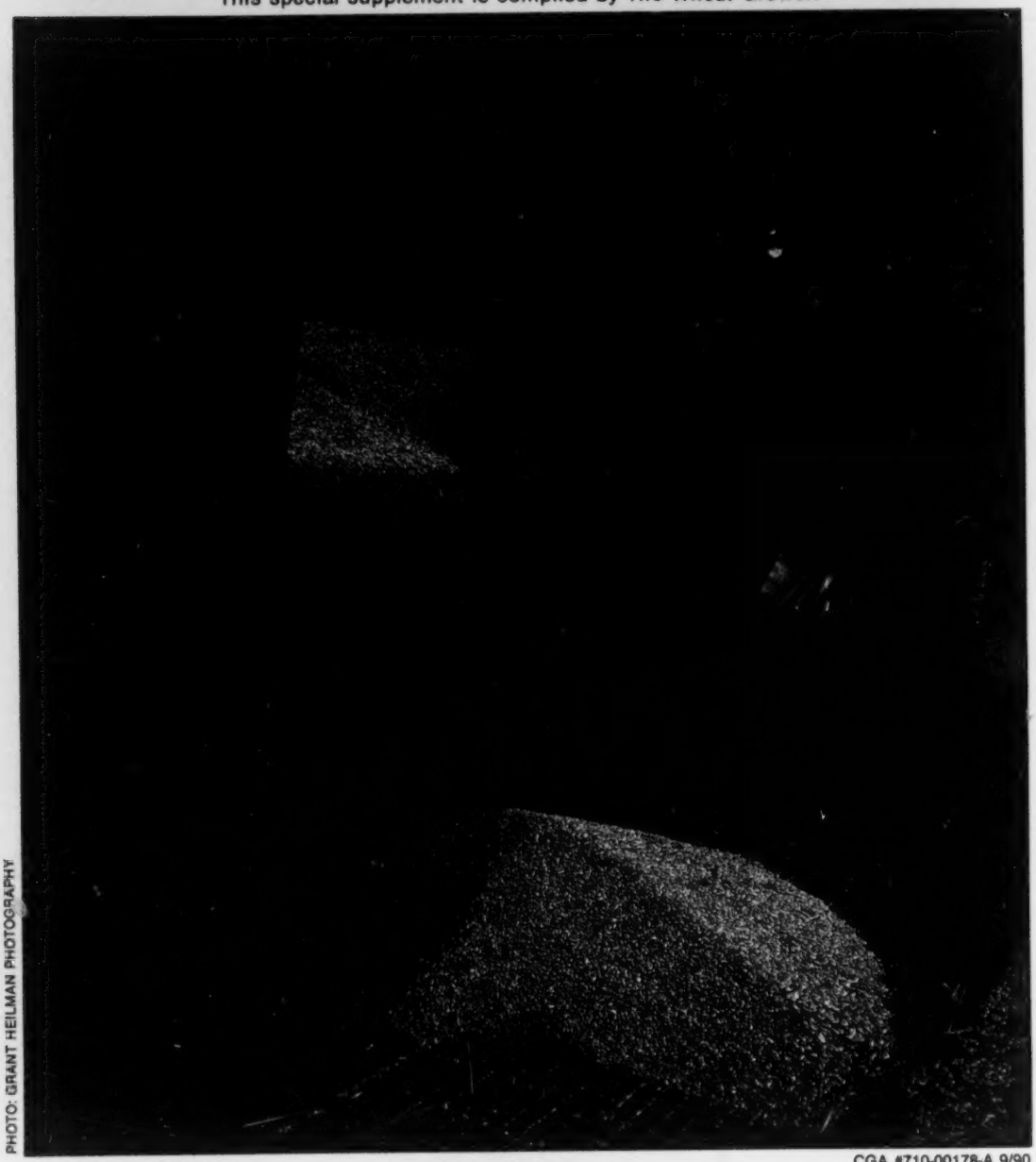
WHEAT FACTS

1990

This special supplement is compiled by *The Wheat Grower.*



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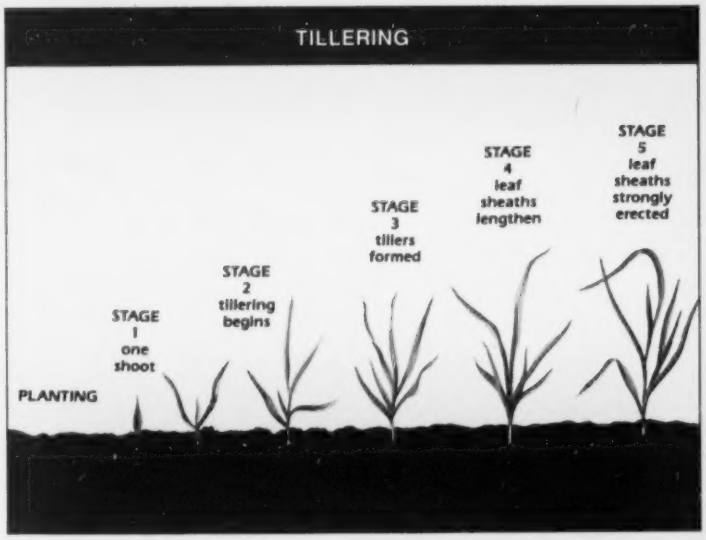
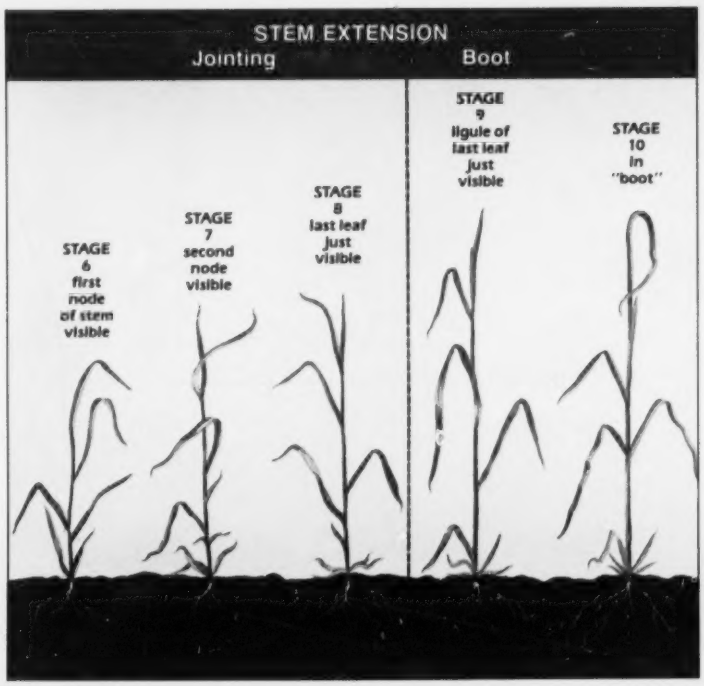
FEEKES' SCALE OF WHEAT DEVELOPMENT

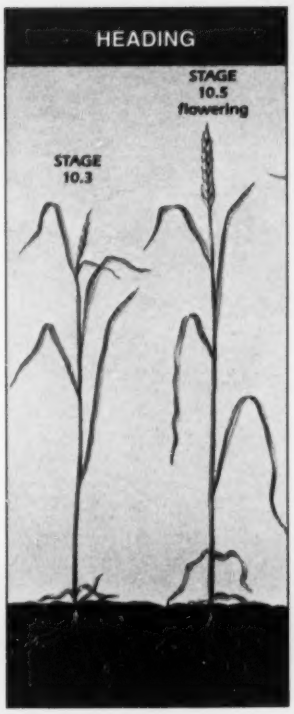
Knowing the various stages of growth and development of a wheat crop enables growers to exercise better management of inputs by allowing these inputs to be used at the proper growth stage and not according to a calendar date.

Agronomists have developed the "Feekes' Scale," an objective measure of the growth and development of wheat plants, to help growers identify the optimum time to apply inputs.

This measuring system ranges from 1.0 (to designate emergence of the first seedling leaf) to 11.4 (to designate mature plants with hard grain).




STEM EXTENSION
Jointing
Boot
STAGE 6 first node of stem visible
STAGE 7 second node visible
STAGE 8 last leaf just visible
STAGE 9 ligule of last leaf just visible
STAGE 10 in "boot"



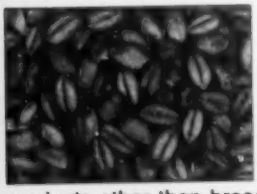
Courtesy Mobay

SIX BASIC CLASSES OF WHEAT

Wheat varieties grown in the United States are either "winter wheat" or "spring wheat," depending on the season each is planted. Winter wheat is sown in the fall and has some preliminary growth before cold weather arrives. The plants have a special gene that allows them to lie dormant through the winter. In the spring, they resume growth and grow rapidly until summertime harvest. Spring wheat, produced in northern states where winters are too severe for fall-sown wheat, is sown in the spring as soon as the ground is workable and grows continuously until harvest.

The many varieties of winter and spring wheat are grouped into six basic classes. The class each variety fits into is determined by the hardness, color and shape of its kernels, as well as by its planting time. Each class of wheat has its own similar family characteristics, especially as related to milling and to baking or other food use. The six basic classes are:

HARD RED WINTER: An important bread wheat. Accounts for a majority of the U.S. wheat crop. Produced in the Great Plains states, a large interior area extending from the Mississippi River west to the Rocky Mountains, and from the Dakotas and Montana down to Texas. Fall seeded. Wide range of protein content. Good milling and baking characteristics. No subclasses.



SOFT WHITE WHEAT: Used in the same ways as Soft Red Winter (for bakery products other than bread). Grown mainly in the Pacific Northwest; to a lesser extent in California, Michigan, Wisconsin and New York. Includes both winter and spring varieties. High yields. Relatively low protein. An important export wheat, particularly to the Far East. Subclasses include Western White and Club White.

SOFT RED WINTER: Grown in the eastern third of the United States. High yielding. Relatively low protein. Provides flour for cakes, pastries, quick breads, crackers and snack foods. No subclasses.

HARD RED SPRING: Another important bread wheat. Excellent protein content and milling and baking characteristics. Spring seeded. Grown in north central United States: North Dakota, South Dakota, Minnesota and Montana. Subclasses include Dark Northern Spring, Northern Spring and Red Spring.

DURUM: The hardest of all U.S. wheat. Provides semolina for spaghetti, macaroni and other pasta products. Grown in the same northern area as Hard Red Spring, mainly in North Dakota. Subclasses are Hard Amber Durum, Amber Durum and Durum.

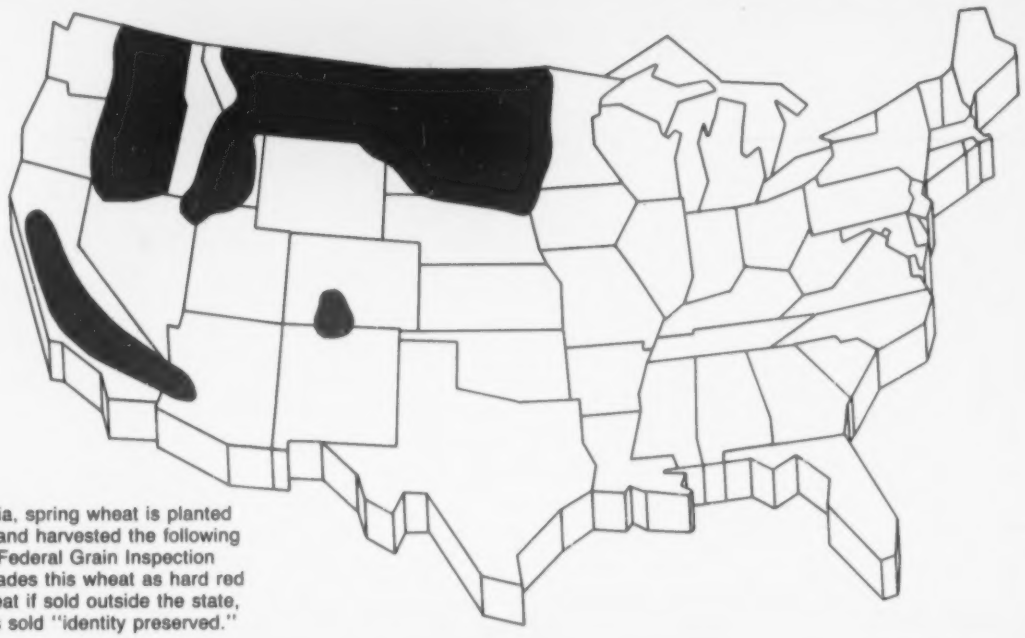
HARD WHITE WHEAT: Used in ways similar to Hard Red Winter, although it also is used in products such as flat breads, oriental noodles and tortillas. Protein content varies. Grown primarily in Kansas and California. No subclasses.

UNCLASSED WHEAT: Any variety of wheat which is not classifiable under other criteria provided in the wheat standards. There are no subclasses in this class. This class includes: 1) Red Durum wheat; 2) any wheat which is other than red or white in color.

MIXED WHEAT: Any mixture of wheat consisting of less than 90 percent of one class and more than 10 percent of one other class, or a combination of classes which meets the definition of wheat.

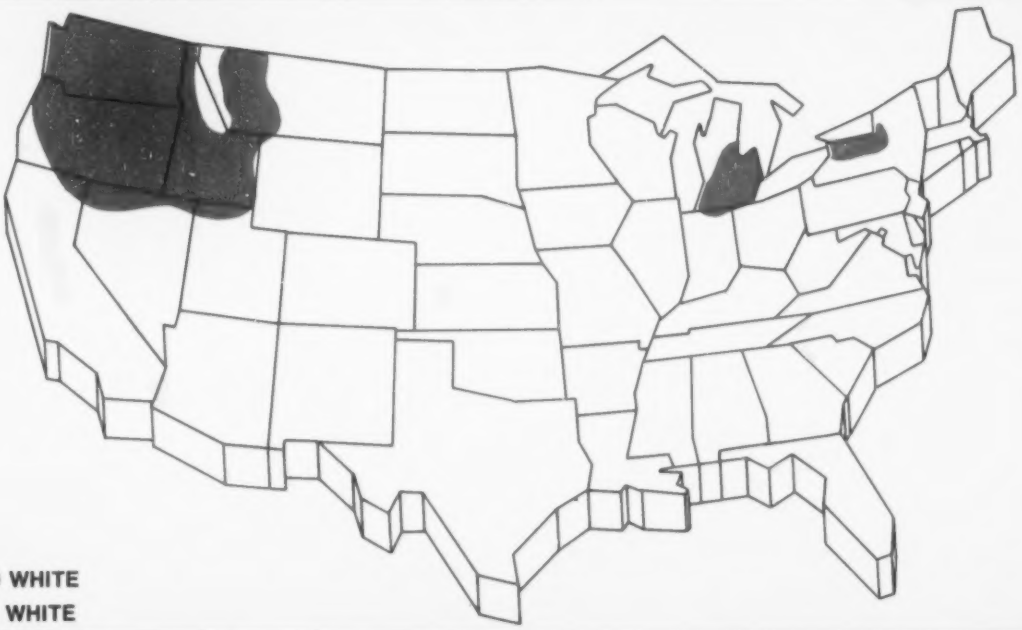
Wheat Facts Sponsored by CIBA-GEIGY

U.S. WHEAT GROWING REGIONS
Hard Red Spring



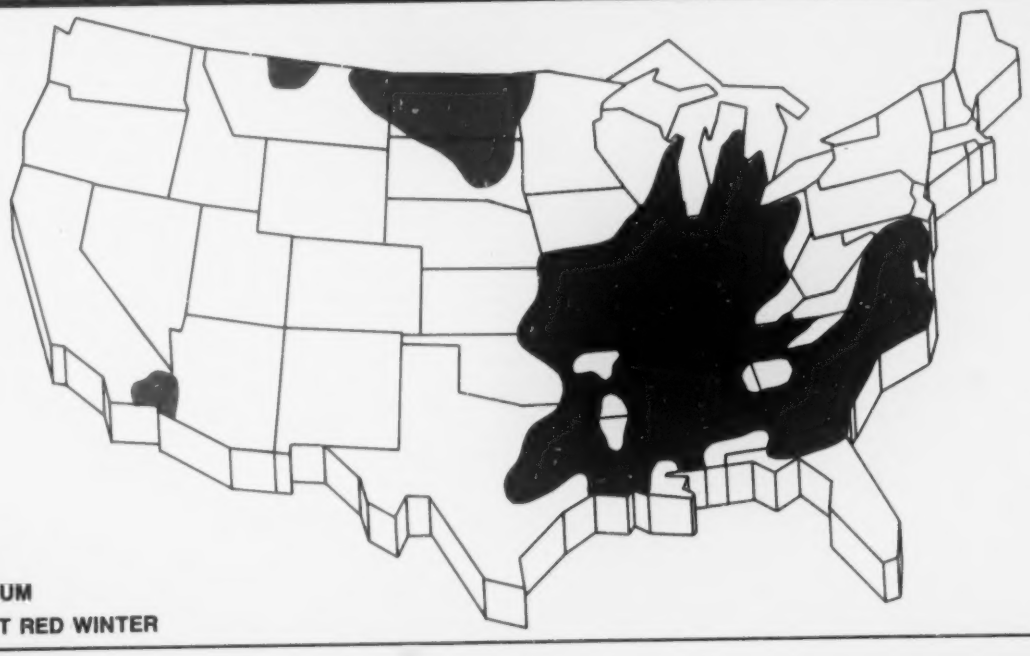
In California, spring wheat is planted in the fall and harvested the following year. The Federal Grain Inspection Service grades this wheat as hard red spring wheat if sold outside the state, unless it is sold "identity preserved."

U.S. WHEAT GROWING REGIONS
White Wheat



U.S. WHEAT GROWING REGIONS
Hard Red Winter

U.S. WHEAT GROWING REGIONS
Durum and Soft Red Winter



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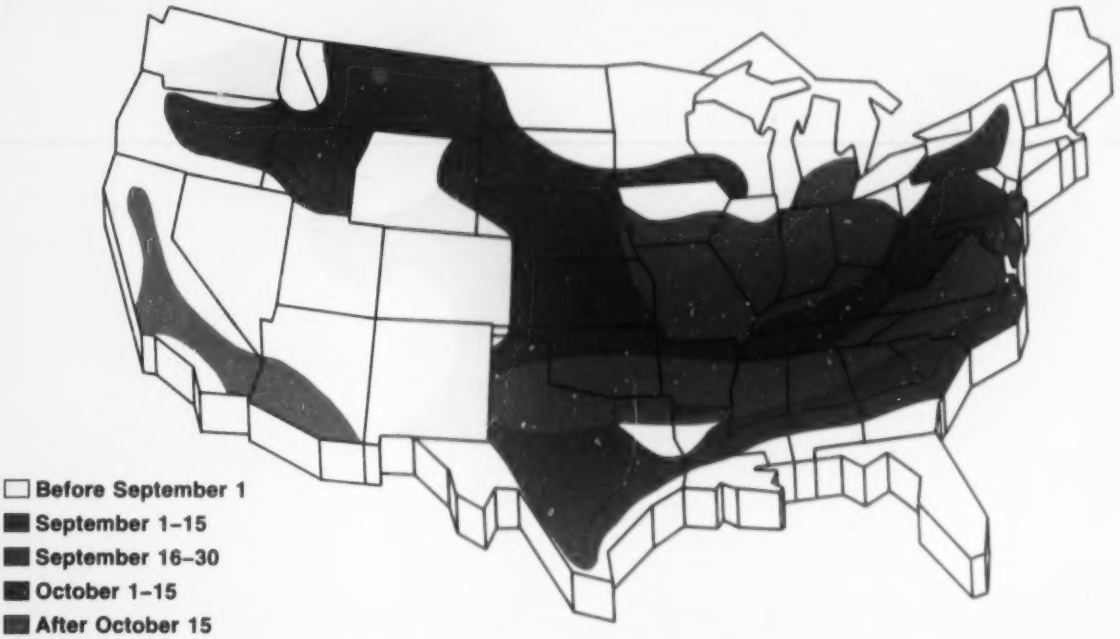
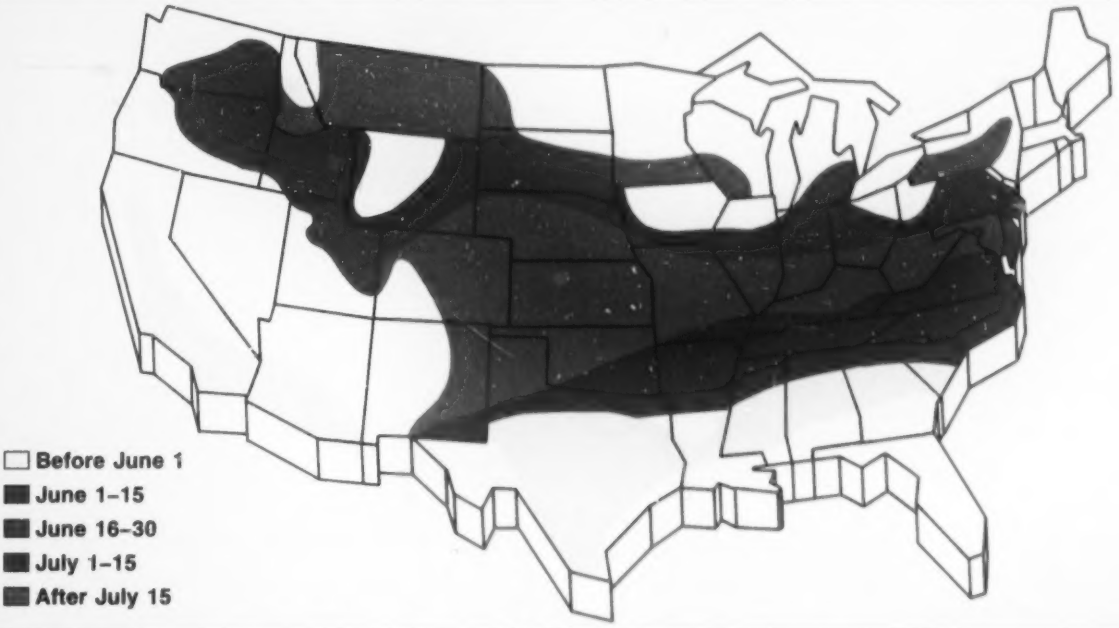
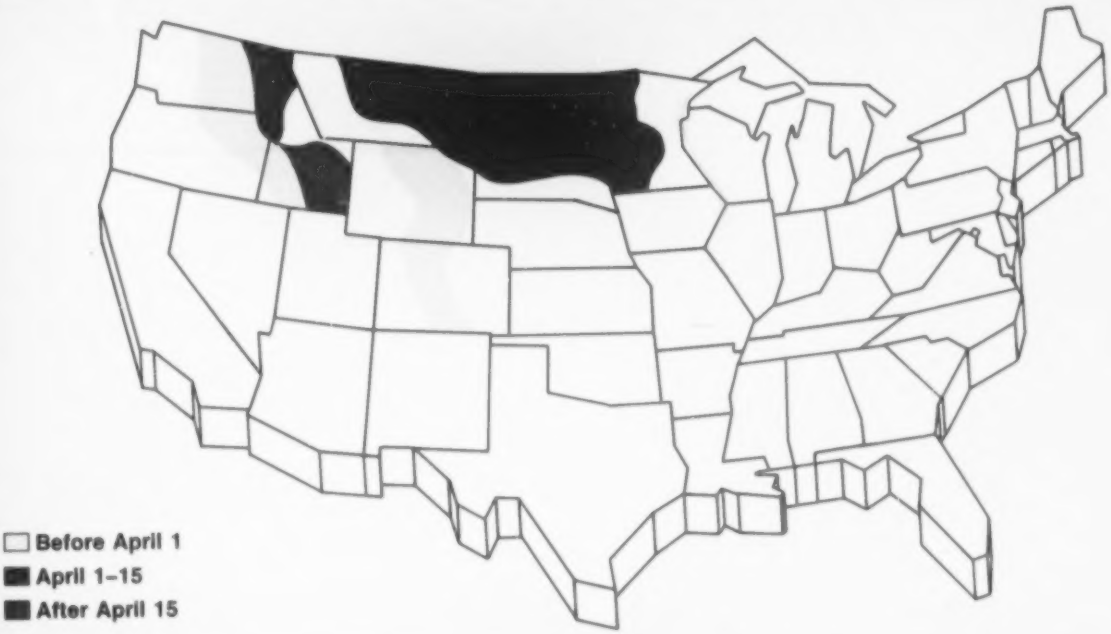
U.S. WINTER WHEAT
Usual Start of Planting



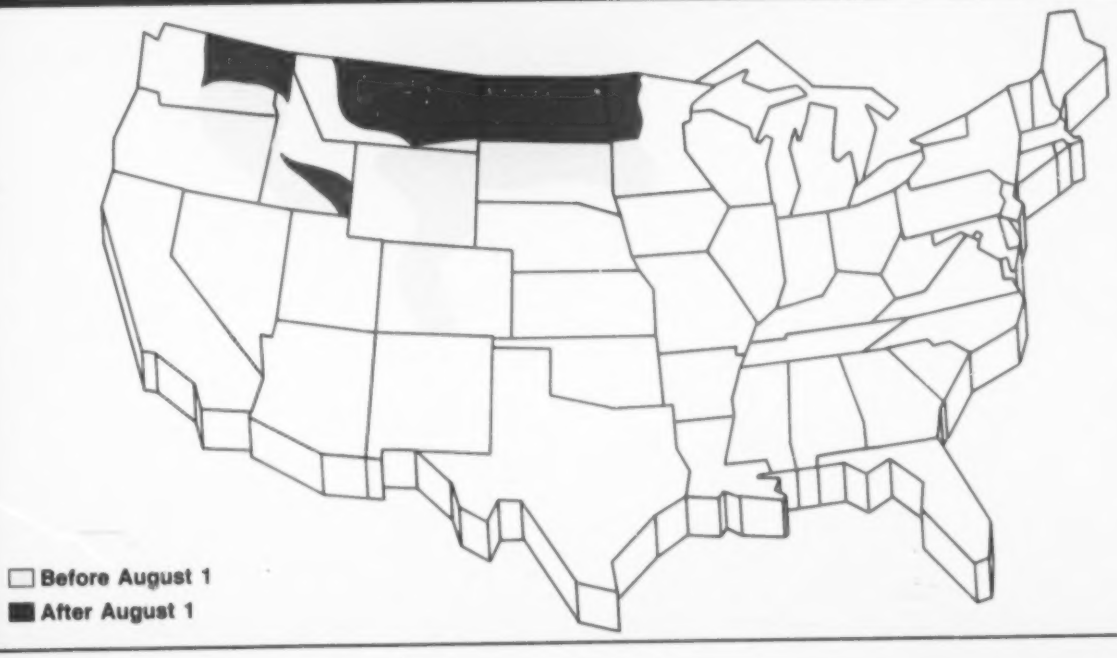
U.S. WINTER WHEAT
Usual Start of Harvesting



U.S. SPRING WHEAT
Usual Start of Planting



U.S. SPRING WHEAT
Usual Start of Harvesting



Wheat Facts Sponsored by CIBA-GEIGY

GRADES AND GRADE REQUIREMENTS FOR ALL CLASSES OF WHEAT
(EXCEPT MIXED)

	Minimum limits of—		Maximum limits of—						
	Test Weight per bushel							Wheat of other classes[4]	
	Hard Red Spring wheat or White Club wheat (pounds)[1]	All other classes and subclasses (pounds)	Heat damaged kernels (percent)	Damaged kernels (total)[2] (percent)	Foreign material (percent)	Shrunken and broken kernels (percent)	Defects (total)[3] (percent)	Contrasting classes (percent)	Wheat of other classes[5] (percent)
U.S. No. 1	58.0	60.0	0.2	2.0	0.5	3.0	3.0	1.0	3.0
U.S. No. 2	57.0	58.0	0.2	4.0	1.0	5.0	5.0	2.0	5.0
U.S. No. 3	55.0	56.0	0.5	7.0	2.0	8.0	8.0	3.0	10.0
U.S. No. 4	53.0	54.0	1.0	10.0	3.0	12.0	12.0	10.0	10.0
U.S. No. 5	50.0	51.0	3.0	15.0	5.0	20.0	20.0	10.0	10.0

U.S. Sample Grade . . . U.S. Sample Grade is wheat that:
(a) does not meet the requirements for the grades U.S. No. 1, 2, 3, 4, or 5; or
(b) contains 32 or more insect-damaged kernels per 100 grams of wheat; or
(c) contains 8 or more stones, 2 or more pieces of glass, 3 or more crotalaria seeds *(Crotalaria spp.)*, 2 or more castor beans *(Ricinus communis)*, 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), or 2 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1,000 grams of wheat; or
(d) has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or
(e) is heating or otherwise of distinctly low quality.

[1]These requirements also apply when Hard Red Spring wheat or White Club wheat predominate in a sample of Mixed wheat.
[2]Includes heat-damaged kernels.
[3]Defects (total) include damaged kernels (total), foreign material, and shrunken and broken kernels. The sum of these three factors may not exceed the limit for defects.
[4]Unclassed wheat of any grade may contain not more than 10 percent of wheat of other classes.
[5]Includes contrasting classes.

1989 CROP WHEAT SURVEY
(number of samples by wheat class and grade)

	Wheat class						
GRADE	DURUM	HARD RED SPRING	HARD RED WINTER	SOFT RED WINTER	WHITE	MIXED	ALL CLASSES
No. 1	1,161	1,896	2,292	162	1,326	28	6,865
No. 2	284	279	830	232	962	13	2,600
No. 3	94	109	383	366	434	5	1,391
No. 4	35	44	128	323	180	3	713
No. 5	19	9	52	224	52	—	356
Factor only	54	58	403	540	4	2	1,061
Sample	37	49	75	130	84	2	377
All Grades	1,684	2,444	4,163	1,977	3,042	53	13,363

Source: Federal Grain Inspection Service

WHEAT PRODUCTION IN NAWG STATES, 1988–1990

	Area Harvested (1,000 acres)			Yield (bushels per acre)			Production (1,000 bushels)		
State	1988	1989	1990[1]	1988	1989	1990[1]	1988	1989	1990[1]
Arizona	85	118	98	90.9	90.9	94	7,730	10,722	9,178
Arkansas	1,070	1,200	1,300	53.0	44.0	36	56,710	52,800	46,800
California	549	675	607	84.3	77.9	80	46,275	52,605	48,315
Colorado	2,352	2,270	2,590	33.8	27.4	34	79,540	62,100	86,950
Idaho	1,150	1,370	1,370	65.7	66.7	75	75,520	91,420	102,810
Kansas	9,500	8,900	11,800	34.0	24.0	39	323,000	213,600	460,200
Kentucky	380	450	500	54.0	50.0	37	20,520	22,500	18,500
Minnesota	2,250	2,699	2,854	23.0	38.0	44	51,730	102,504	124,705
Montana	3,830	5,235	5,535	15.7	27.7	27	59,970	145,030	150,890
Nebraska	2,000	2,050	2,250	36.0	27.0	37	72,000	55,350	83,250
New Mexico	290	160	300	24.0	20.0	30	6,960	3,200	9,000
North Carolina	480	630	550	50.0	34.0	43	24,000	21,420	23,650
North Dakota	7,230	10,330	11,170	14.3	23.5	32	103,390	242,320	356,930
Oklahoma	4,800	5,700	6,300	36.0	27.0	33	172,800	153,900	207,900
Oregon	755	920	972	68.6	58.5	60	51,800	53,835	58,010
South Dakota	2,638	3,520	3,885	14.4	23.6	33	38,006	83,080	127,235
Texas	3,200	3,000	4,200	28.0	20.0	31	89,600	60,000	130,200
Washington	2,060	2,270	2,480	60.5	48.7	64	124,620	110,610	157,560
Wyoming	208	204	209	22.5	23.1	29	4,680	4,708	5,960
Total	44,827	51,701	58,970	31.4	29.8	37	1,408,851	1,541,704	2,208,043

[1]Indicated as of July 1, 1990.

U.S. WHEAT: SUPPLY AND USE, 1973–1990

Crop Year	Planted Acres (1,000)	Harvested Acres (1,000)	Yield (bu/a)	Production	Supply[1]	Domestic Food	Feed, Seed, Other	Exports	Total Use	Ending Stocks	Free Stocks	CCC Inventory	Farmer-Owned Reserve
				MILLION BUSHELS									
1973	59,254	54,148	31.6	1,711	2,311	544	209	1,217	1,971	340	340	1	—
1974	71,044	65,368	27.3	1,782	2,125	545	127	1,018	1,690	435	435	—	—
1975	74,900	69,499	30.6	2,127	2,564	589	137	1,173	1,898	666	666	—	—
1976	80,395	70,927	30.3	2,149	2,817	588	166	950	1,704	1,113	1,113	—	—
1977	75,410	66,686	30.7	2,046	3,161	587	273	1,124	1,983	1,178	788	48	342
1978	65,989	56,495	31.4	1,776	2,955	592	245	1,194	2,031	924	481	50	393
1979	71,424	62,454	34.2	2,134	3,060	596	187	1,375	2,158	902	454	188	260
1980	80,788	71,125	33.5	2,381	3,285	611	172	1,514	2,297	989	429	200	360
1981	88,251	80,642	34.5	2,785	3,777	602	245	1,771	2,618	1,159	407	190	562
1982	86,232	77,937	35.5	2,765	3,932	616	292	1,509	2,417	1,515	262	192	1,061
1983	76,419	61,390	39.4	2,420	3,939	643	469	1,429	2,540	1,399	600	188	611
1984	79,213	66,928	38.8	2,595	4,003	651	503	1,424	2,578	1,425	393	378	654
1985	75,575	64,734	37.5	2,425	3,866	683	363	915	1,961	1,905	870	602	433
1986	72,068	60,723	34.4	2,092	4,018	724	470	1,004	2,198	1,821	528	830	463
1987	65,829	55,945	37.7	2,108	3,945	721	365	1,598	2,684	1,261	511	283	467
1988	65,529	53,189	34.1	1,812	3,096	735	240	1,419	2,394	702	225	190	287
1989[2]	76,615	62,149	32.8	2,036	2,758	730	244	1,250	2,224	535	274	117	144
1990[3]	77,326	69,986	38.6	2,698	3,254	740	450	1,250	2,440	814	n/a	n/a	n/a

[1]Includes beginning stocks, production and imports. [2]Preliminary. [3]Projected.

Wheat Facts Sponsored by CIBA-GEIGY

U.S. WHEAT BY CLASSES: SUPPLY AND DISAPPEARANCE 1989/90–1990/91

(million bushels)

Year beginning June 1	Hard Winter	Hard Spring	Soft Red	White	Durum	Total
1988/90 Beginning Stocks	302	219	39	81	60	702
Production	711	433	548	251	92	2,036
Total Supply*	1,014	659	587	335	164	2,758
Domestic Use	429	221	205	60	59	974
Exports	370	285	350	190	55	1,250
Exports as pct of production	52.0	65.8	63.9	75.7	59.8	61.4
Total Use	799	506	555	250	114	2,224
Ending Stocks	215	153	32	85	50	535
1990/91 Beginning Stocks	215	153	32	85	50	535
Production	1,213	517	535	320	114	2,698
Total Supply*	1,428	677	567	408	175	3,254
Domestic Use	558	261	239	67	65	1,190
Exports	515	185	290	200	60	1,250
Exports as pct of production	42.5	35.8	54.2	62.5	52.6	46.3
Total Use	1,073	446	529	267	125	2,440
Ending Stocks	355	231	38	141	50	814

*Beginning stocks plus production plus imports.

PRICES RECEIVED BY FARMERS, ALL WHEAT NAWG STATES, 1987–90

(dollars per bushel)

	Marketing Year			1990					
STATE	1987	1988	1989	Jan.	Feb.	March	April	May	June*
Arizona	3.05	3.90	4.16	3.60	n/a	n/a	3.60	3.60	3.90
Arkansas	2.43	3.40	3.70	3.85	n/a	n/a	n/a	3.19	3.16
California	2.90	3.77	3.83	3.67	3.35	3.69	3.85	3.66	3.62
Colorado	2.51	3.79	3.54	3.74	3.67	3.40	3.34	3.42	3.03
Idaho	2.59	4.05	3.75	3.80	3.60	3.33	3.33	3.42	3.19
Kansas	2.43	3.60	3.75	3.77	3.57	3.49	3.52	3.34	3.01
Kentucky	2.50	3.60	3.65	n/a	n/a	n/a	n/a	n/a	n/a
Minnesota	2.57	3.81	3.60	3.60	3.52	3.56	3.54	3.59	3.46
Montana	2.74	3.97	3.64	3.74	3.62	3.61	3.56	3.50	3.32
Nebraska	2.45	3.70	3.70	3.82	3.60	3.54	3.51	3.43	3.11
New Mexico	2.28	3.25	3.65	n/a	n/a	n/a	n/a	n/a	n/a
North Carolina	2.55	3.40	3.40	n/a	n/a	n/a	n/a	n/a	n/a
North Dakota	2.95	4.15	3.41	3.42	3.40	3.37	3.43	3.42	3.30
Oklahoma	2.46	3.60	3.80	3.89	3.63	3.51	3.57	3.19	2.91
Oregon	2.86	4.35	4.00	4.10	3.64	3.49	3.37	3.30	3.20
South Dakota	2.60	3.73	3.55	3.62	3.48	3.39	3.48	3.48	3.30
Texas	2.36	3.40	3.75	3.76	3.52	3.48	3.31	3.33	2.93
Washington	2.82	4.25	4.05	4.27	3.73	3.58	3.47	3.39	3.27
Wyoming	2.50	3.66	3.62	n/a	n/a	n/a	n/a	n/a	n/a

*Preliminary.

ALL WHEAT: MONTHLY AVERAGE PRICES RECEIVED BY FARMERS 1980–1989

(dollars per bushel)

Crop Year	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Average Wt'd.	Average Simple
1980	3.69	3.81	3.94	3.99	4.19	4.32	4.22	4.21	4.17	4.09	4.07	3.95	3.91	4.06
1981	3.70	3.62	3.62	3.65	3.77	3.85	3.80	3.78	3.70	3.67	3.68	3.64	3.65	3.71
1982	3.39	3.26	3.34	3.38	3.43	3.48	3.51	3.57	3.57	3.66	3.75	3.75	3.55	3.51
1983	3.50	3.34	3.61	3.65	3.61	3.54	3.48	3.50	3.40	3.49	3.63	3.66	3.54	3.53
1984	3.45	3.29	3.42	3.43	3.43	3.46	3.38	3.38	3.38	3.38	3.43	3.28	3.38	3.39
1985	3.09	2.93	2.89	3.00	3.09	3.23	3.25	3.19	3.15	3.28	3.36	3.01	3.16	3.12
1986	2.48	2.25	2.26	2.28	2.30	2.43	2.49	2.53	2.58	2.58	2.63	2.66	2.42	2.46
1987	2.45	2.31	2.31	2.54	2.62	2.69	2.70	2.75	2.79	2.74	2.79	2.99	2.57	2.64
1988	3.37	3.50	3.61	3.82	3.84	3.88	3.94	4.02	4.30	4.07	4.03	4.01	3.72	3.87
1989	3.84	3.78	3.74	3.72	3.75	3.71	3.80	3.71	3.56	3.49	3.49	3.40	3.72	3.67

WHEAT PROGRAM SUMMARY 1981–1991

Crop Year	Support/ Target Price ($/bushel)	Loan Rate ($/bushel)	Average Price to Farmers ($/bushel)	Number of Farms Participating	National Acreage Allotment/ Base (million a.)	Acreage Diversion Set Aside on Farms Participating (million a.)	Payments Diversion &SG&H[1] (million $)
1981	3.81	3.20/3.50	3.69	782,608	84.50[2]	none	none
1982	4.05	3.55/4.00	3.45	222,912	90.66[2]	5.80	none
1983	4.30	3.65	3.51	498,013	90.19	30.02	308.9
1984	4.38	3.30	3.39	317,565	93.96	18.45	506.1
1985	4.38	3.30	3.08	472,886	94.04	18.82	652.7
1986	4.38	2.40	2.42	456,725	91.60	21.01	215.0
1987	4.38	2.28	2.57	557,203	87.55	23.93	none
1988	4.23	2.21	3.72	547,012	84.76	22.46	none
1989	4.10	2.06	3.72	434,554	82.32	9.70	none
1990	4.00	1.95	–	–	–	–	–
1991	n/a	n/a	–	–	–	–	–

[1]Special Grazing and Hay program.
[2]National program acreage.

Wheat Facts Sponsored by CIBA-GEIGY

THE KERNEL OF WHEAT...

The wheat kernel, sometimes called the wheat berry, is the seed from which the wheat plant grows. Each tiny seed contains three distinct parts that are separated during the milling process to produce flour. The kernel of wheat is a storehouse of nutrients essential to the human diet.

Endosperm

. . . about 83 percent of the kernel weight. It is the source of white flour. The endosperm contains the greatest share of the protein in the whole kernel, carbohydrates, iron as well as many B-complex vitamins, such as riboflavin, niacin, and thiamine.

Bran

. . . about 14½ percent of the kernel weight. Bran is included in whole wheat flour and is also available separately. Of the nutrients in whole wheat, the bran contains a small amount of protein, larger quantities of the B-complex vitamins listed above, trace minerals, and indigestible cellulose material also called dietary flour.

NUTRIENT COMPARISION OF SELECTED WHEAT FOODS

*100 Grams Edible Portion

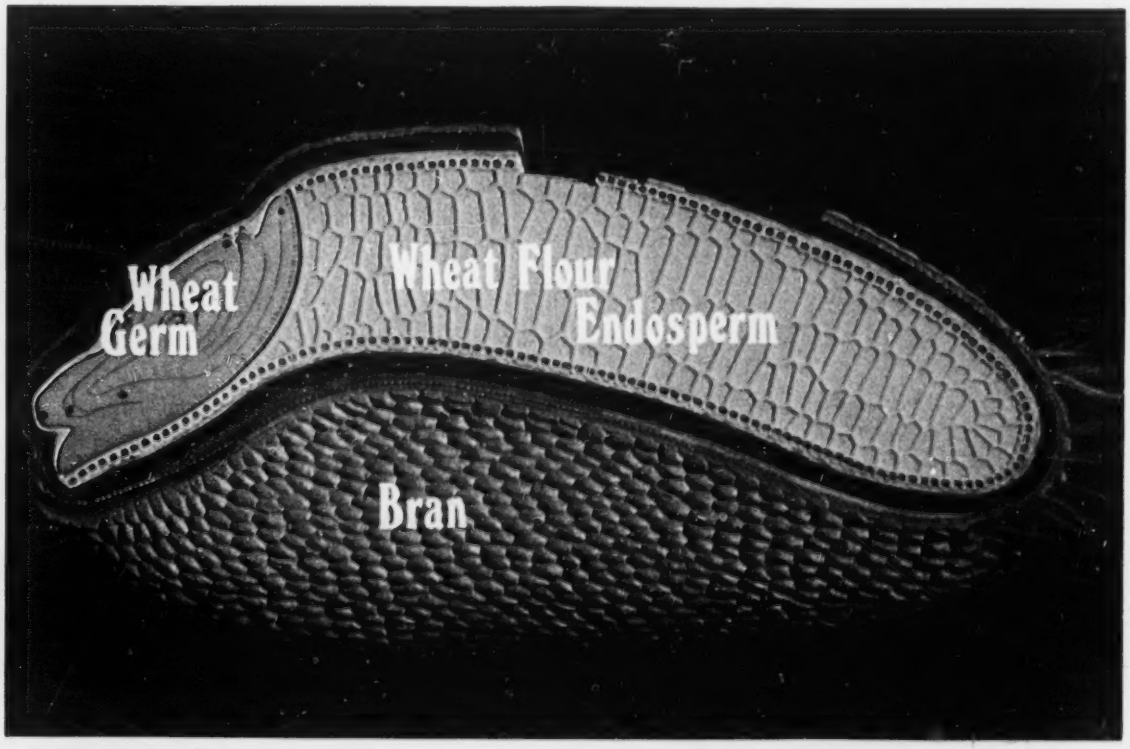
Product	Calories	Protein grams	Fat grams	Carbohydrate grams
White Bread	267	8.28	3.92	48.82
Whole Wheat Bread	245	9.62	4.36	45.41
Cookie, Chocolate Chip	463	5.00	26.81	64.08
Doughnut	419	5.10	23.07	48.97
English Muffin	237	7.91	1.94	45.94
Crackers, Cheese	538	9.13	32.68	51.95
Pasta, dry	(368)	12.80	1.60	75.10

*100 grams equal 3.5 ounces
Parentheses ( ) denote calculated values USDA Human Nutrition Service

Germ

. . . about 2½ percent of the kernel weight. The germ is the embryo or sprouting section of the seed, usually separated because of the fat that limits the keeping quality of flour. Of the nutrients in whole wheat, the germ contains minimal quantities of protein, but a greater share of B-complex vitamins and trace minerals. Wheat germ can be purchased separately and is included in whole wheat flour.

Courtesy Wheat Foods Council



WHEAT NUTRIENTS

Wheat foods are an essential part of a balanced diet because they provide good nutritional value for their caloric cost. Following are the basic nutritional components of wheat foods:

CARBOHYDRATE

Complex Carbohydrate—Wheat flour is a good source of complex carbohydrate, the most efficient source of energy available to the human body. Unlike simple carbohydrates, such as sugars, which are quickly absorbed into the blood stream, complex carbohydrate provides a steady source of fuel because it is released slowly.

Fiber—Fiber is the undigestible carbohydrate in food which acts like a broom to sweep out the digestive tract. Adequate fiber intake has been related to a lower incidence of cancer of the colon and some types of heart disease and to better control diabetes. One slice of whole wheat bread contains 1.5 grams of dietary fiber; one slice of white bread contains 0.5 grams.

PROTEIN

Wheat foods are moderate sources of incomplete protein. This means that while wheat and other cereal grains may contain all eight of the amino acids necessary for good health, not all eight are found at adequate levels. However, combining wheat or other cereal grains with animal proteins or legumes makes the grain protein complete. Within the cereal group, wheat contains more protein than rice or corn.

FAT

Fats account for 2 to 23 percent of wheat foods, although wheat alone contains very little fat. Most often, the fat content in wheat foods results from fat added in production, such as the oil or shortening found in many baked or fried wheat foods. Bread and pasta products are low-fat foods because the major ingredient, by weight, is wheat flour.

OTHER VITAMINS AND MINERALS

Thiamine—One of the essential B-vitamins needed daily for good appetite, digestion and healthy nerves. Thiamine helps the body make better use of fat and carbohydrate. Wheat foods are a good source of thiamine.

Niacin—A B-vitamin essential for the efficient use of protein by the body. Wheat foods are a good source of niacin.

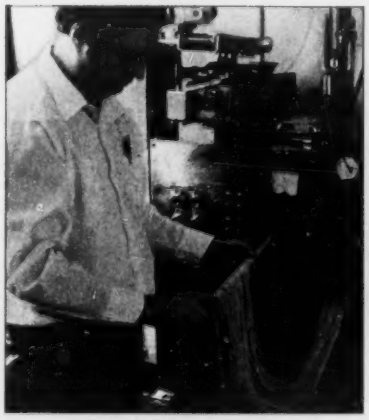
Iron—Vital to nutrition. Combines with protein to form hemoglobin, a compound in red blood cells that carries oxygen from the lungs to each cell in the body while it carries away carbon dioxide. Wheat foods are a reliable source of iron for normal dietary needs.

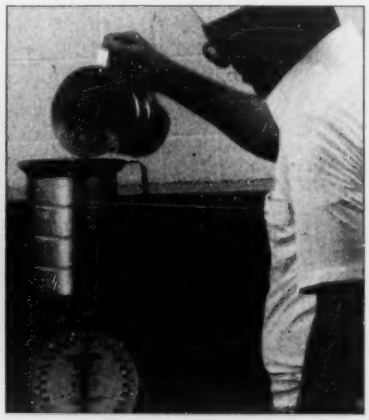
Zinc—Important for skin healing and growth properties. Wheat foods are a good source of zinc.

Riboflavin—Essential for growth and good vision. Helps the body make use of carbohydrate, fat and protein. Wheat foods are a fair source of riboflavin.

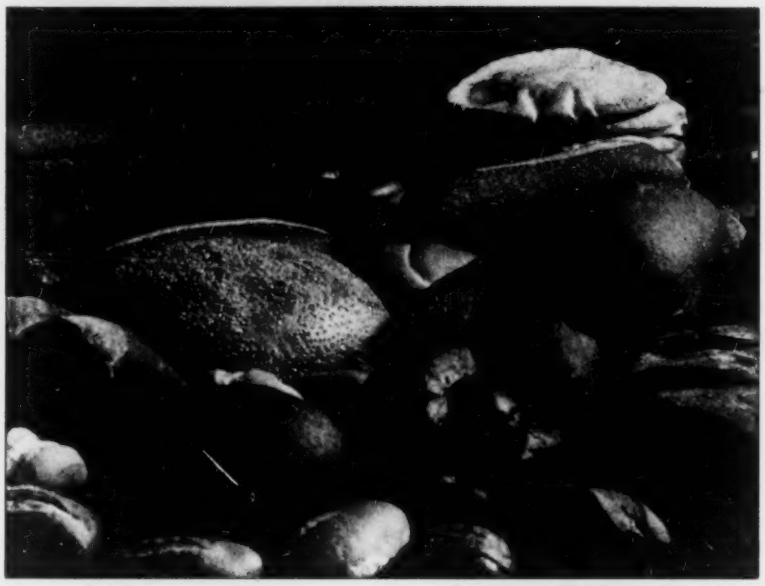
Trace Minerals—Wheat foods are a good source of selenium and magnesium, nutrients essential to good health.

Courtesy Wheat Foods Council





WHEAT FLOURS



ALL-PURPOSE FLOUR

All-purpose flour is the finely ground endosperm of the wheat kernel separated from the bran and germ during the milling process. All-purpose flour is made from hard wheats or a combination of soft and hard wheat from which the home baker can make a complete range of satisfactory baked products such as yeast breads, cakes, cookies, pastries and noodles.

Enriched All-Purpose Flour has iron and B-vitamins added in amounts equal to or exceeding that of whole wheat flour.

Bleached Enriched All-Purpose Flour is treated with chlorine to mature the flour, condition the gluten and improve the baking quality. The chlorine evaporates and does not destroy the nutrients but does reduce the risk of spoilage or contamination.

Unbleached Enriched All-Purpose Flour is bleached by oxygen in the air during an aging process and is off-white in color. Nutritionally, bleached and unbleached flour are the same.

BREAD FLOUR

Bread flour, from the endosperm of the wheat kernel, is milled primarily for commercial bakers but is also available at retail outlets. Although similar to all-purpose flour, it has a greater gluten strength and generally is used for yeast breads.

SELF-RISING FLOUR

Self-rising flour is an all-purpose flour with salt and leavening added. One cup of self-rising flour contains 1-1/2 teaspoons baking powder and 1/2 teaspoon salt. Self-rising flour can be substituted for all-purpose flour in a recipe by reducing salt and baking powder according to those proportions.

WHOLE WHEAT FLOUR

Whole wheat flour is a coarse-textured flour ground from the entire wheat kernel and thus contains the bran, germ and endosperm. The presence of bran reduces gluten development. Baked products made from whole wheat flour tend to be heavier and denser than those made from white flour.

OTHER FLOURS

Cake Flour—Milled from soft wheat. Especially suitable for cakes, cookies, crackers and pastries. Low in protein and gluten.

Pastry Flour—Milled from a soft, low gluten wheat. Comparable in protein but lower in starch than cake flour.

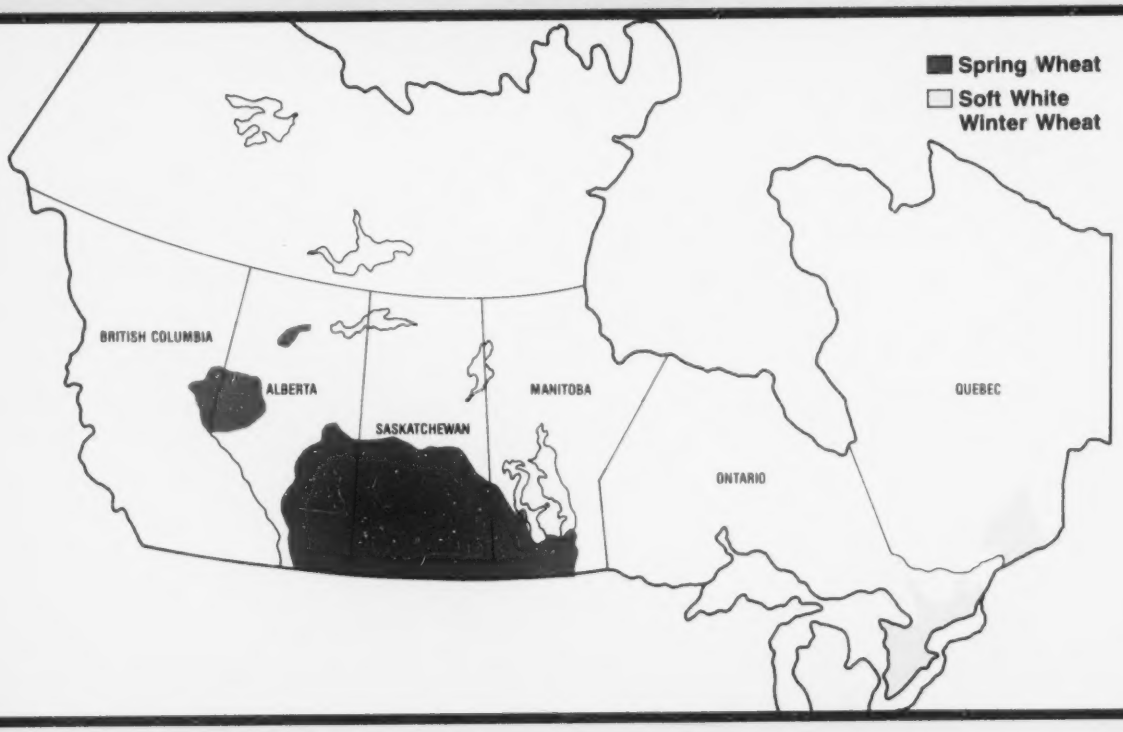
Gluten Flour—Used by bakers in combination with flours having a low protein content because it improves the baking quality and produces gluten bread of high protein content.

Semolina—Coarsely ground endosperm of durum wheat. High in protein. Used in high quality pasta products.

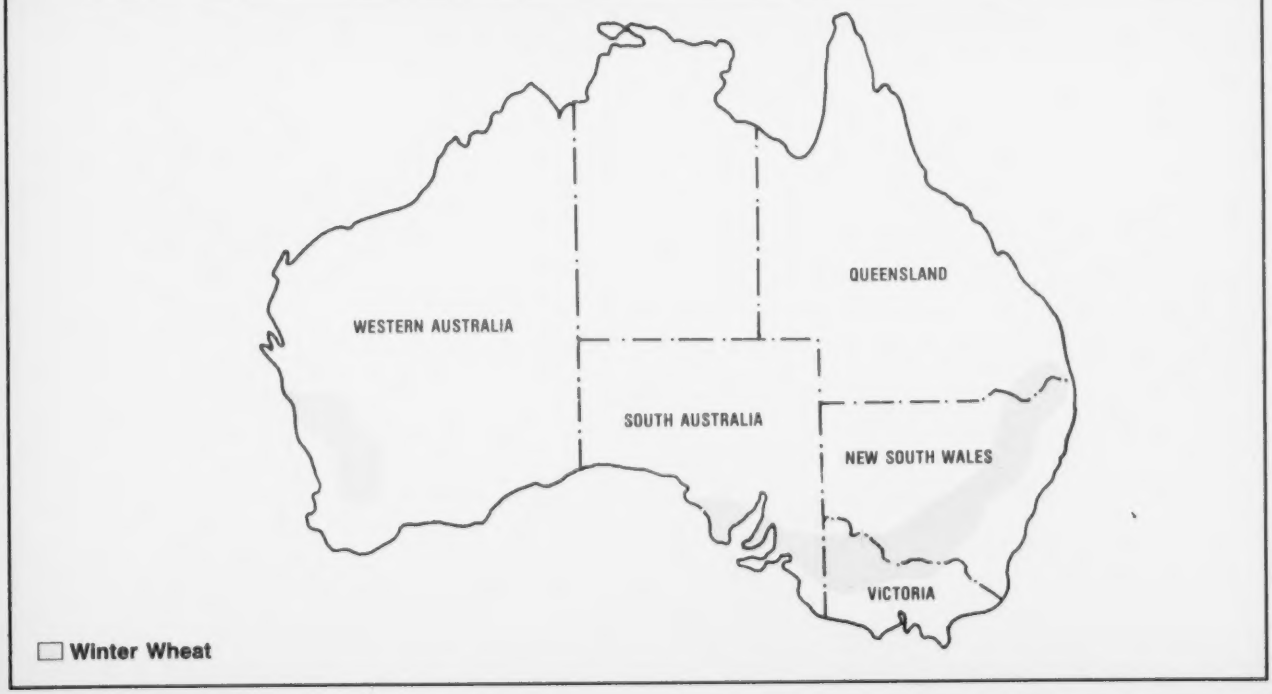
Durum Flour—By-product of semolina production. Used to make commercial U.S. noodles.

Farina—Coarsely ground endosperm of hard wheats. Prime ingredient in many U.S. breakfast cereals. Also used in the production of inexpensive pasta.

CANADIAN WHEAT GROWING REGIONS

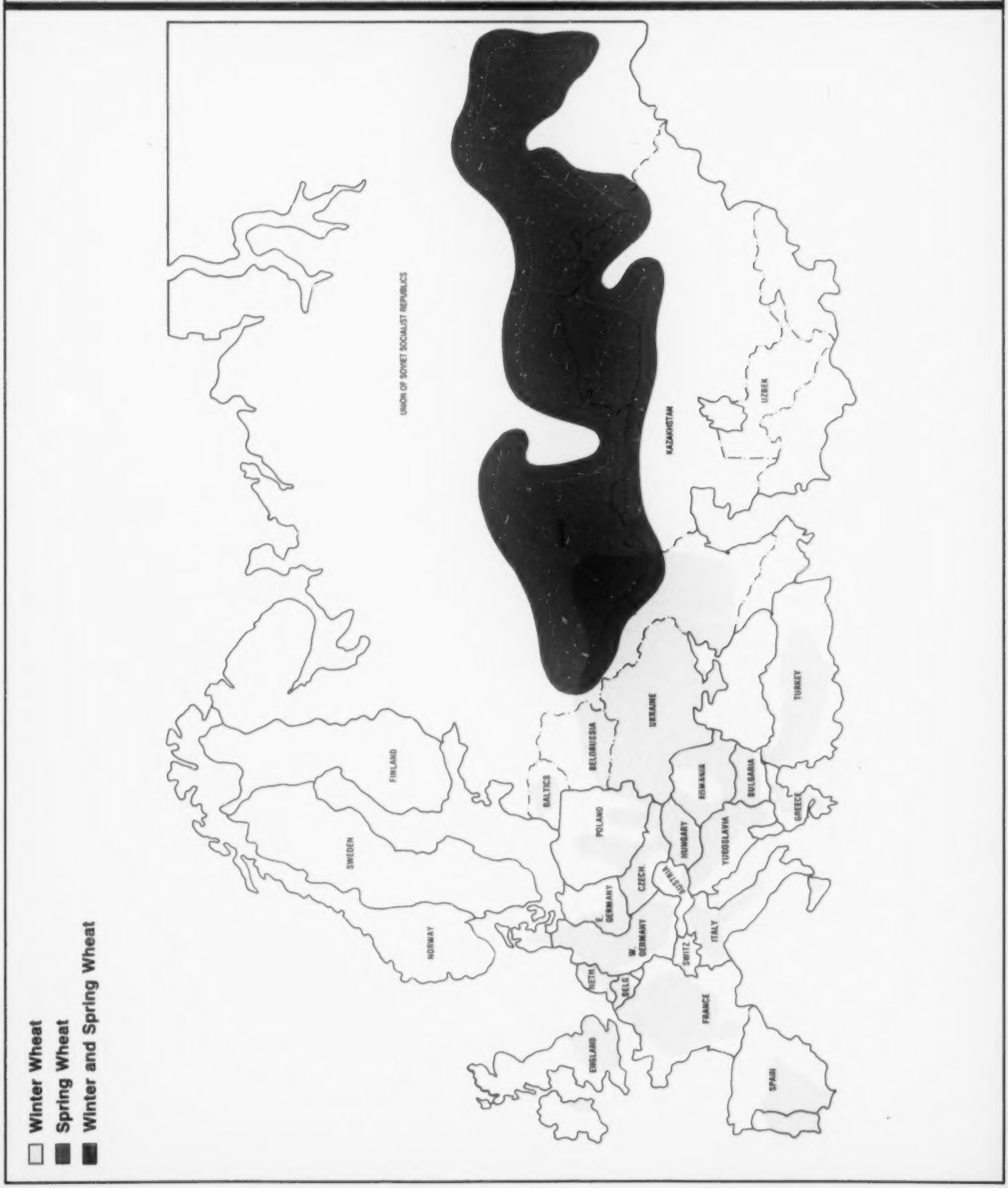


AUSTRALIAN WHEAT GROWING REGIONS



Wheat Facts Sponsored by CIBA-GEIGY

EUROPEAN AND SOVIET WHEAT GROWING REGIONS, BY CLASS



U.S. WHEAT EXPORTS BY DESTINATION, 1986/87–1989/90

Ranked in Descending Order for Marketing Year 1989/90 Compared with the Four Previous Marketing Years (1,000 metric tons)

Country	1989/90 Exports	Rank	1988/89 Exports	Rank	1987/88 Exports	Rank	1986/87 Exports	Rank
China	5,550	1	8,094	1	3,856	2	61	50
USSR	4,313	2	4,959	2	12,375	1	—	—
Japan	3,308	3	2,861	4	3,236	3	3,317	1
Egypt	2,939	4	2,981	3	2,514	4	2,556	2
Korea	1,739	5	1,798	6	2,095	5	1,777	3
Algeria	1,451	6	1,132	9	1,991	6	1,729	4
Pakistan	1,290	7	1,613	7	198	26	74	48
Iraq	1,285	8	679	14	1,068	9	728	9
Philippines	902	9	1,173	8	567	13	713	10
Taiwan	741	10	831	13	872	10	816	7
Venezuela	674	11	530	15	419	16	891	6
Turkey	641	12	51	45	72	46	224	23
Sri Lanka	618	13	507	16	367	17	397	19
Israel	557	14	458	17	494	14	538	15
Bangladesh	524	15	834	12	780	11	438	18
Morocco	524	16	933	11	1,874	7	1,428	5
Italy	522	17	342	22	357	18	521	16
Colombia	444	18	406	19	315	20	276	21
Jordan	389	19	142	28	233	22	151	33
Ecuador	313	20	373	20	340	19	332	20
Tunisia	311	21	345	21	593	12	620	12
Indonesia	271	22	146	27	231	23	441	17
Dominican Republic	218	23	186	23	22	58	166	29
Mexico	211	24	1,052	10	228	25	87	44
Peru	196	25	437	18	190	27	222	24
Belgium	174	26	126	31	134	34	113	37
Guatemala	161	27	157	24	139	32	107	38
Thailand	161	28	128	30	119	35	84	45
El Salvador	154	29	89	39	154	29	141	34
Jamaica	152	30	99	37	138	33	152	32
Brazil	133	31	—	—	69	47	647	11
Costa Rica	132	32	154	25	109	40	105	41
Portugal	131	33	142	29	111	39	128	35
Zaire	125	34	122	33	149	31	154	31
Sudan	116	35	75	42	437	15	263	22
Hong Kong	113	36	109	35	115	16	107	40
Honduras	105	37	95	38	88	42	107	39
Bolivia	104	38	123	32	181	28	172	27
Panama	90	39	86	40	78	45	93	43
Trinidad	89	40	72	43	80	44	116	36
Haiti	70	41	149	26	114	37	97	42
Cyprus	51	42	25	53	16	63	23	60
Ghana	51	43	50	46	12	66	25	59
Malaysia	50	44	24	56	69	48	80	47
Yemen (Sana)	50	45	104	36	230	24	180	26

Wheat Facts Sponsored by CIBA-GEIGY

WHEAT INSPECTED FOR EXPORT BY CLASS, REGION AND PORT AREA

June 1989–May 1990 (1,000 bushels)

Port Area	Hard Red Spring	Hard Red Winter	Soft Red Winter	White	Durum	Mixed	Total
St. Lawrence Seaway	11,399	0	2,314	0	11,363	0	25,076
Lakes (Overseas)							
Duluth-Superior Area	40,391	0	0	0	24,504	0	64,895
Toledo Area	0	0	2,536	172	0	0	2,708
Subtotal	40,393	0	2,536	172	24,504	0	67,605
Atlantic							
North	0	0	0	0	0	0	0
South	697	0	66,261	6,203	0	0	73,161
Subtotal	697	0	66,261	6,203	0	0	73,161
Gulf							
Mississippi River	109,296	19,837	255,122	0	7,723	0	391,978
East Gulf	98	626	8,695	0	0	0	9,419
N. Texas Gulf	20,519	223,194	11,477	0	14,306	0	269,496
S. Texas Gulf	0	4,996	262	0	533	0	5,791
Subtotal	129,913	248,653	275,556	0	22,562	0	676,684
Pacific							
Columbia River	107,042	86,170	18	181,443	954	0	375,627
Puget Sound	1,149	0	0	4,370	0	0	5,519
California	0	19,760	0	514	3,983	0	24,257
Subtotal	108,191	105,930	18	186,327	4,937	0	405,403
Interior	100	37	0	0	6	0	143
Totals							
June 89–May 90	290,693	354,620	346,685	192,702	63,372	0	1,248,072
June 88–May 89	198,553	626,308	319,498	260,153	19,958	401	1,424,871

Wheat shipped for storage in Canada is reported at the time of shipment from St. Lawrence Seaway ports.

1989 U.S. WHEAT EXPORTS BY CLASS AND GRADE

(1,000 bushels)

GRADE	HRW	HRS	SRW	Durum	White	Mixed	TOTAL
No. 1	11,150	12,112	n/r	4,757	4,285	n/r	32,304
No. 2	497,731	214,473	416,382	6,987	199,209	101	1,334,883
No. 3	n/r	673	934	20,714	n/r	n/r	22,321
No. 4	n/r	n/r	n/r	n/r	n/r	n/r	n/r
No. 5	n/r	n/r	n/r	n/r	n/r	n/r	n/r
Sample	n/r	233	n/r	n/r	n/r	n/r	233
TOTAL	508,881	227,491	417,316	32,458	203,494	101	1,389,741

n/r = none reported

WHEAT SUPPLY AND DISAPPEARANCE: MAJOR EXPORTERS

1985/86–1990/91
(million metric tons/hectares)

	Area Harvested	Yield (mt/ha)	Production	Domestic Use	Exports[1] July/June	Exports[1] Mkt. Year	Percent of World Trade	Exports as Percent of Production	Mkt. Year Ending Stocks
ARGENTINA (Marketing Year December/November)									
1985/86	5.3	1.61	8.5	4.4	6.1	4.3	7.2	71.8	0.3
1986/87	5.0	1.79	8.9	4.5	4.3	4.4	4.7	48.3	0.2
1987/88	4.8	1.84	8.8	4.5	3.8	3.7	3.6	42.2	0.8
1988/89	4.7	1.79	8.4	4.7	3.5	4.0	3.6	41.7	0.5
1989/90[2]	5.5	1.86	10.2	4.6	6.0	5.9	6.2	58.8	0.1
1990/91[3]	6.0	1.92	11.5	4.7	6.7	6.6	6.6	58.3	0.3
AUSTRALIA (Marketing Year October/September)									
1985/86	11.7	1.38	16.2	2.9	16.0	16.0	18.8	98.8	5.9
1986/87	11.1	1.45	16.1	2.6	14.8	15.6	16.3	91.9	3.8
1987/88	9.1	1.36	12.4	3.5	12.2	9.9	11.6	98.4	2.8
1988/89	8.9	1.58	14.1	2.8	10.8	11.4	11.2	76.6	2.6
1989/90[2]	8.9	1.64	14.7	3.4	10.7	11.3	11.0	72.8	2.6
1990/90[3]	9.8	1.48	14.5	3.4	11.0	11.0	10.9	75.9	2.7
CANADA (Marketing Year August/July)									
1985/86	13.7	1.77	24.3	5.6	16.8	17.7	19.8	69.1	8.6
1986/87	14.2	2.20	31.4	6.4	20.8	20.8	22.9	66.2	12.7
1987/88	13.5	1.93	26.0	7.9	23.6	23.5	22.5	90.8	7.3
1988/89	13.0	1.23	16.0	5.8	13.5	12.4	13.9	84.4	5.1
1989/90[2]	13.6	1.79	24.4	6.1	16.5	17.0	17.0	67.6	6.3
1990/91[3]	14.1	1.88	26.5	6.0	19.0	19.0	18.8	71.7	7.8
EUROPEAN COMMUNITY (Marketing Year July/June)									
1985/86	15.3	4.68	71.6	59.3	15.6[4]	27.8	18.4	21.8	16.3
1986/87	15.7	4.58	72.0	56.7	16.4[4]	28.0	18.1	22.8	17.1
1987/88	15.9	4.50	71.4	58.2	14.8[4]	28.4	14.1	20.7	15.7
1988/89	15.5	4.81	74.7	59.5	21.0[4]	32.2	21.7	28.1	12.5
1989/90[2]	16.3	4.83	78.6	58.2	21.0[4]	32.5	21.7	26.7	12.6
1990/91[3]	15.7	5.15	80.8	59.8	22.0[4]	32.8	21.8	27.2	13.7
UNITED STATES (Marketing Year June/May)									
1985/86	26.2	2.52	66.0	28.6	25.0	24.7	29.4	37.9	51.8
1986/87	24.6	2.32	56.9	32.6	28.4	27.2	31.3	49.9	49.6
1987/88	22.6	2.53	57.4	29.6	43.4	43.5	41.3	75.6	34.3
1988/89	21.5	2.29	49.3	26.5	37.6	38.6	38.8	76.3	19.1
1989/90[2]	25.2	2.20	55.4	28.4	34.5	34.0	35.6	63.2	12.3
1990/91[3]	28.3	2.60	73.4	32.4	34.0	34.0	33.7	46.3	22.2

[1]Includes the wheat equivalent of flour.
[2]Preliminary.
[3]Projected.
[4]Excludes Intra-EC trade.

Wheat Facts Sponsored by CIBA-GEIGY

WHEAT: WEIGHTS, MEASURES AND CONVERSION FACTORS

Bushel Weights:

1 bu. wheat/soybeans	= 60 lbs.
1 bu. corn/sorghum	= 56 lbs.
1 bu. barley	= 48 lbs.
1 bu. oats	= 32 lbs.

1 Bushel of Wheat Equals:

0.030	short tons
0.0272155	metric tons
0.0267857	long tons
27.21555	kilograms

Bushels to Metric Tons:

Wheat/soybeans	=	bu.	×	0.027216
Corn/sorghum	=	bu.	×	0.025400
Barley	=	bu.	×	0.021772
Oats	=	bu.	×	0.014515

Wheat Flour Equivalents

1 metric ton wheat flour	= 1.38 metric ton wheat
100 pounds	= 2.3 bushels
43.5 pounds	= 1 bushel
1 barrel wheat flour	= 196 pounds
4.51 bushels	= 1 barrel of flour

1 Metric Ton Equals

2,204.622	pounds
1,000	kilograms
36.74371	bu. of wheat or soybeans
39.3679	bu. of corn or sorghum
45.9296	bu. of barley
68.8944	bu. of oats
22.046	hundredweight
10	quintals

Acreage Equivalents

1 hectare	= 2.4710 acres
1 sq. mile	= 640 acres (259 hectares)
1 acre	= 0.404694 hectares = 4,840 sq. yards = .9 football fields, excluding end zones.

Test Weight

pounds/bushel × 1.2872 = kilograms/hectalitre

Yield Equivalents

Wheat: bu./acre x 0.6725	= metric tons/hectare
Corn: bu./acre x .06277	= metric tons/hectare
Barley: bu/acre x .05380	= metric tons/hectare
Oats: bu./acre x .03587	= metric tons/hectare